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The Measurement of Life Satisfaction and Happiness in Old-Old Age

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Abstract
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The Measurement of Life Satisfaction and Happiness in Old-Old Age

ALEX J. BISHOP AND PETER MARTIN

ABSTRACT

Happiness and satisfaction with life has emerged as a renewed topic of interest among gerontological investigators. However, the conceptualization of life satisfaction and happiness in advanced later life can present challenges relative to selection of proper measurement instrumentation. This chapter addresses the conceptualization and measurement of life satisfaction and happiness in very old age in three key ways. First, the conceptualization of subjective well-being is addressed in reference to the oldest old. Second, psychometric properties pertaining to past and current use of classical (e.g., Life Satisfaction Index-A), second-generation (e.g., Satisfaction with Life Scale), and domain-specific (e.g., Retirement Satisfaction Index) measures of subjective well-being within old and very old populations is addressed. Third, future directions for the advancement of measurement of subjective well-being in old-old populations are highlighted.

INTRODUCTION

In Chapter 3, Shmotkin referred to subjective well-being as a "dynamic and flexible agent of adaptation" in old-old age. Gerontologists have a long history of developing quantitative instruments to assess feelings of satisfaction and the pursuit of happiness in later life (Ferraro & Schafer, 2008). Yet reliable and valid psychometric tools to evaluate subjective well-being among exceptionally old adults can be difficult to find. As Fry and Ikels highlighted in Chapter 15, the well-being construct is conceptually sound but often too complex to operationalize. This is a possible explanation for why quantitative assessments of subjective well-being have yielded mixed results. Some investigators have reported a decline in life satisfaction after age 65, with

substantial losses occurring in old-old age (Mroczek & Spiro, 2005), whereas others have acknowledged that happiness remains moderately stable across time (Diener, Suh, Lucas, & Scollon, 2006; Diener, Suh, Lucas, & Smith, 1999; Lucas, 2008). In effect, subjective well-being represents a paradox in aging.

Ambiguous evidence supports what Cohen-Mansfield described as the shifting baseline of well-being in Chapter 4. This is commonly referred to as the stability-despite-loss phenomenon in gerontological literature (Mroczek & Kolarz, 1998). In other words, most old-old adults express great contentment and appreciation with life despite being challenged by biopsychosocial limitations (e.g., poor health, cognitive impairment, diminished social opportunity; Yang, 2008). Variation of decline in exceptional longevity may be so great that commonly used standardized quantitative measurements of well-being may become relatively ineffective (Poon et al., 2007). Thus, gerontologists investigating subjective well-being must remain cautious but strategic in the selection of developmentally appropriate instrumentation.

Fry and Ikels covered cultural aspects in the measurement of well-being in Chapter 15, as well as the relative contribution of qualitative assessment in well-being research. As a companion piece, the purpose of this chapter is to summarize quantitative measures of subjective well-being. We first address the conceptualization of subjective well-being. Then, we examine classical or first-generation measures, identify contemporary or second-generation instruments, and address domain-specific scales. Finally, we discuss future directions for subjective well-being measurement of the oldest old.

CONCEPTUALIZING SUBJECTIVE WELL-BEING

Subjective well-being has been defined as a cognitive orientation of life based on positive and negative emotions, domain satisfactions, and global judgments of life satisfaction and happiness (Diener, Suh, Lucas, & Smith, 1999; Eid & Larsen, 2008). Cognitive-affective processes are salient components of perceived quality of life in exceptional old age. For instance, many old-old adults appraise distal life achievements and current ambitions relative to basic resources (e.g., food, shelter, economic security; Jopp & Rott, 2006; Yang, 2008). Negative circumstances (e.g., poor health status) can compromise resources above and beyond pleasant memories and positive happenings (Larsen & Prizmic, 2008). Yet late adulthood is often reported to be one of the happiness developmental periods of life (Mehlsen, Platz, & Fromholt, 2003). Aberg, et al. (2005) acknowledged that old-old individuals

frequently engage in the cognitive review and recall of past pleasantries in life. Such behavior is believed to bolster emotional satisfaction and contentment with present life conditions (Aberg et al., 2005). This is one plausible explanation that persons aged 70 and older tend to report greater happiness and positive well-being than younger age groups (Berg, Hassing, McClearn, & Johansson, 2006). In effect, adaptive behaviors appear to regulate the ebb and flow of emotions, which evolve into judgments of life satisfaction during extreme old age.

Some investigators have also highlighted the relevance of time in shaping perceptions of well-being (Hoyt & Creech, 1983; Pavot, Diener, & Suh, 1998). Temporality is a definitive characteristic of subjective well-being involving a comparative assessment of past, present, and anticipated future events (Pavot et al., 1998). Exceptionally old persons often perceive their time as limited (Lang & Carstensen, 2002). Some may have found fulfillment many years ago but feel that there is nothing left to accomplish in very late life. In turn, an expression of discontentment with life may persist. Other persons may have experienced numerous hardships, failures, traumas, or losses earlier in life, yet remain presently happy with life in extreme old age. Therefore, the age and developmental period during which persons encounter life events as well as the meaning and value assigned to such experiences can alter feelings of happiness (Diener et al., 2006; Krause, 2007a, 2009. Thus, it is not enough to assess whether old-old adults are happy or unhappy. Rather, it is essential that quantitative evaluations of life satisfaction also account for the occurrence of distal and proximal experiences which compromise or improve feelings of happiness (Diener et al., 2006). In other words, life satisfaction is a cumulative and developmental process.

Relative to advanced old age, subjective well-being may be indicative of gerotranscendence. Joan Erikson (1997) equated gerotranscendence as the ninth stage of psychosocial development. During this developmental period, exceptionally old persons may experience significant physical and mental decline followed by a significant loss in autonomy, increased dependence on others, and increased feelings of despair. However, Tornstam (2005) theorized that persons in exceptional old age typically remain emotionally connected to humanity, retain an affinity for the past, seek redefinition of self in space and time, prefer solitary or meditative moments, and lack concern for material possessions. This suggests that evaluation of subjective well-being requires sophisticated measurement instrumentation to capture transcendent dimensions of living an exceptionally long life. There has been a progression of attempts made by investigators to enhance quantitative

assessment of life satisfaction and happiness in late and very late life. Such efforts can be classified into three main categories, including early or first-generation measures, contemporary or second-generation assessments, and domain-specific evaluations.

FIRST-GENERATION MEASURES

No other measures have had greater impact on the quantitative assessment of subjective well-being in late adulthood than the Life Satisfaction Index-A (Neugarten et al., 1961), the Affect Balance Scale (Bradburn, 1969), and the Philadelphia Geriatric Morale Scale (Ferraro & Schaefer, 2008; Lawton, 1975). These classical scales were devised as multidimensional assessments of subjective well-being. In the process, these first-generation measures have emerged as the most widely used quantitative instruments cited in aging research (Ferraro & Schafer, 2008). As Fry and Ikels emphasized in Chapter 15, several of these measures have persisted in gerontological research for more than 50 years because they represent some of the most "powerful instruments" and "do what scales do." In essence, they remain the standard by which most contemporary psychometric measures of subjective well-being must achieve.

Life Satisfaction Index-A

The Life Satisfaction Index-A (LSI-A) (Neugarten, Havighurst, & Tobin, 1961) is often recognized as the gold standard in the measurement of life satisfaction among older adults (Ferraro & Schaefer, 2008; Pavot & Diener 2008). The LSI-A is a 21-item scale used to measure five factors: (a) zest (e.g., degree of engagement in activities with other people), (b) resolution (e.g., extent to which persons take responsibility for their own lives), (c) congruence (e.g., the degree to which desired life goals are accomplished), (d) self-concept (e.g., concept of self physically, psychologically, and socially), and (e) mood tone (e.g., feelings of happiness). Respondents are asked to rate their level of agreement on a three-point Likert scale (–1 = disagree, 0 = uncertain, and 1 = agree). Neugarten et al. (1961) reported interitem correlations ranging from .57 to .84. Original reliability of the LSI-A was also reported to be strong at .78 (Neugarten et al., 1961).

In more recent studies, the LSI-A has evinced strong test-retest reliability in culturally diverse samples. For example, Chou and Chi (1999) investigated determinants of life satisfaction among 544 Hong Kong Chinese elders and reported test-retest reliability to be .81 at baseline and .84 during a 3-year

TABLE 17.1. *Summary of original psychometric properties of subjective well-being measures*

Measure	Item response			Reliability		
	Scale	Scoring	Rating	Interitem	Alpha	Test-retest
First generation						
LSI-A (Neugarten et al., 1961)	21 items	3 point	–1 = disagree; 1 = agree 1 = agree	$r = .57$ to $.84$	.78	–
BABS (Bradburn, 1969)	10 items	Dichotomous	0 = no; 1 = yes	$r = -.43$ to $.30$	.76	–
Positive affect	5 item			$r = .23$ to $.74$.	.83	.86 to .96
Negative affect	5 items			$r = .40$ to $.71$	.81	.90 to .97
PGMS-R (Lawton, 1975)	17 items	Dichotomous	0 = no; 1 = yes	–	–	–
Agitation	6 items			–	.85	–
Attitude	5 items	–	–		.81	
Lonely-dissatisfaction	6 items			–	.85	–
Second generation						
SWLS (Diener et al., 1985)[a]	5 items	7 point	1 = strongly disagree; 7 = strongly agree	$r = .61$ to $.81$	–	.82 to .87
SHS (Lyubomirsky & Lepper, 1999)[b]	4 items	7 point	1 = not at all; 7 = a great deal		.86	.55 to .90
PANAS (Watson et al., 1988)	20 items	5 point	1 = very slightly	$r = -.12$ to $-.23$	–	–
			5 = extremely			
Positive Affect	10 items			–	.86 to .90	.47 to .68
Negative Affect	10 items			–	.84 to .87	.39 to .71

Ryff PWB Scales (Ryff, 1989a)	120 items	6 point	1 = strongly disagree;	–	–	–
			6 = strongly agree	–	–	–
Self-acceptance	20 items			–	.93	.85
Positive relations	20 items			–	.91	.83
Autonomy	20 items			–	.86	.88
Environmental mastery	20 items			–	.90	.81
Purpose in life	20 items			–	.90	.82
Personal growth	20 items			–	.87	.81
Domain-specific						
Retirement						
RDI (Smith et al., 1969)	63 items	Dichotomous	0 = no; 1 = yes	r = .19 to .43	–	–
RSI (Floyd et al., 1992)	51 items	4 point	1 = unimportant;	r = .45 to .71	.81	.56 to .77
			4 = important			–
		6 point	1 = very ungratifying;			–
			6 = very gratifying			–
WCI (Karasek & Theorell, 1990)	8 items	5 point	1 = strongly agree;	r = .37 to .62	.64 to .85	–
			5 = strongly disagree			
Housing						
HOOP (Heywood et al., 2002)	1 item	5 point	1 = definitely not;	–	–	
			5 = yes, definitely			
Family						
PAI (Bengston & Black, 1973)	10 items	6 point	1 = not well;	r = .41 to .73		.92
			6 = extremely well			
FII (Bengston & Lovejoy, 1973)	12 items	8 point	1 = almost never;	–	.58 to .89	.81
			8 = almost every day			

(continued)

TABLE 17.1 *(continued)*

Measure	Item response			Reliability		
	Scale	Scoring	Rating	Interitem	Alpha	Test-retest
Religiosity & Spirituality						
CSQ-Revised (Silverman et al., 1983)	72 items	5 point	1 = not at all; 5 = completely	–	.79 to .94	–
SWBS (Paloutzian & Ellison, 1982)[c]	20 items	6 point	1 = strongly disagree; 6 = strongly agree	–		.82 to .99
RWB	10 items	–	–			.88 to .99
EWB	10 items	–	–			.73 to .98
GTG (Krause, 2006)	4 items	4 point	1 = strongly disagree; 4 = strongly agree	–	.96	–
Meaning in Life						
GQ-6 (McCullough et al., 2002)	6 items	7 point	1 = strongly disagree; 7 = strongly agree	–	.76 to .84	–
GQ-6-Adapted (Krause, 2007b)	3 items	4 point	1 = disagree strongly; 4 = agree strongly	–	.86	–
VOL (Lawton et al., 2001)	19-items	5 point	1 = disagree very strongly; 5 = agree very strongly	–	–	–
Positive VOL	13 items			$r = .37$ to $.73$	.94	–
Negative VOL	6 items			$r = .38$ to $.55$	.83	–

[a]Interitem correlations of SWLS reflect original test of scale with older adult sample. [b]Depicted reliability indices of SHS refer to original test with sample of older adult residents from retirement community. [c]Interitem correlation for full SWBS reflects association of all items representing RWB and EWB subscales.

follow-up. Furthermore, Chipperfield and Havens (2001) reported Cronbach's alpha of the LSI-A to be .77 at initial testing and .74 during a 7-year follow-up of 2,180 old and very old adults of diverse cultural decent in Manitoba, Canada (Chipperfield & Havens, 2001). In effect, the LSI-A appears to be a reliable quantitative assessment of life satisfaction in diverse cultural settings.

Investigators should be aware that the LSI-A has undergone extensive methodological critique and factor reconstruction. For example, Adams (1969) examined the reliability and multidimensionality of the LSI-A and reported inconclusive evidence of a five-factor structure. In particular, Adams (1969) was unable to identify any factor that corresponded to the self-concept dimension but did provide support for the dimensions of zest, congruence, and mood tone. In effect, Adams (1969) recommended a shorter 13-item version of the LSI-A designated as the LSI-Z. Investigating a sample of octogenarians, Lyyra, Törmäkangas, Read, Rantanen, and Berg (2006) reconfirmed Adams's (1969) critique and concluded that the zest, congruence, and mood tone dimensions of the LSI-A should be used to evaluate the life satisfaction of old-old persons.

Similar to Adams (1969), Hoyt and Creech (1983) failed to support the five-factor structure of life satisfaction originally proposed by Neugarten et al. (1961). Using a nationally representative sample, Hoyt and Creech (1983) reported evidence of an alternative temporal factor structure reflecting satisfaction with the past, present, and future. Hoyt and Creech (1983) concluded that the LSI-A appeared to capture developmental components of life satisfaction.

Relative to developmental factors, Liang (1984) noted that congruence (e.g., past satisfaction with life) and mood tone (e.g., current happiness) dimensions of the LSI-A were distinct developmental components of life satisfaction. Liang (1984, 1985) structurally integrated these two factors with positive and negative affect dimensions of the Bradburn Affect Balance Scale (Bradburn, 1969) and established an acceptable measurement model of fit using structural equation modeling. Stock, Okun, and Benin (1986) reported success in replicating similar findings in the integration of congruence and mood tone items of the LSI-A with the positive and negative affective dimensions of the Bradburn Affect Balance Scale.

We recommend investigators use LSI-A items representing the mood tone (three items) and congruence (four items) dimensions. This equates to a brief seven-item scale that can be easily administered as a developmental assessment of life satisfaction with old-old respondents. In two previous studies, we used the seven-item LSI-A form and reported alpha

reliabilities of .78 across a sample including 60-, 80-, and 100-year-olds, as well as .53 in an sample consisting of only 100-year-olds (Bishop, Martin, MacDonald, & Poon, 2010; Bishop, Martin, & Poon, 2006). It appears that the seven-item short form of the LSI-A is a rather reliable measure across participant samples that include young-old, old, and old-old adults. However, this does not seem to be the case for exceptionally old samples. Further testing of these items required determining whether the structure of life satisfaction was developmentally different among the oldest old.

Bradburn Affect Balance Scale

The Bradburn Affect Balance Scale (BABS; Bradburn, 1969) is a 10-item scale originally designed to assess positive and negative affect. Respondents are typically asked to think how they have felt (e.g., excited, on top of things, depressed or very unhappy) during the previous few weeks. The initial BABS instructed respondents to answer using a dichotomous scale (0 = no, not at all; 1 = yes, often). However, there is evidence to support use of a four-point Likert scale (1 = not at all; 4 = often) across old and very old adults (Martin, Kliegel, Rott, Poon, & Johnson, 2008).

Bradburn (1969) hypothesized that positive and negative affect are distinct and reliable dimensions of subjective well-being. Relative to internal consistency, Bradburn (1969) reported a Cronbach's alpha of .76 for the full Affect Balance Scale. Interitem correlations across items of the full scale ranged from $r = -.43$ to $r = .30$ (Bradburn, 1969). Bradburn (1969) also provided initial reliability of the positive and negative affect subscales. First, the positive affect subscale was acknowledged to have a Cronbach's alpha of .83, with a test-retest reliability ranging from .86 to .96. Interitem correlations among positive affect items ranged from $r = .23$ to $r = .74$. Second, the negative affect subscale was reported to have an alpha reliability of .81, with test-retest reliability ranging from .90 to .97. Interitem correlations among negative affect items ranged from $r = .40$ to $r = .97$. Thus, original reliability testing of the BABS indicated a reliable measure with two distinct constructs.

Bradburn (1969) also validated that positive and negative affect were unique dimensions across gender and a single-item indicator of happiness. For instance, small gamma associations were reported between summary scores, ranging from .04 to .15 for men and $-.10$ to .04 for women. In addition, positive affect had a reported correlation of .34 (gamma) at Time 1 and .38 (gamma) at Time 2, with a single-item indicator of happiness (e.g.,

feeling very happy, pretty happy, not happy), whereas values for negative affect were reported at $-.33$ and $-.38$ respectively (Bradburn, 1969). Bradburn (1969) concluded that the positive and negative affect subscales are separate dimensions indicative of psychological well-being across gender and measures of happiness.

Stacey and Gatz (1991) tested the longitudinal integrity of the BABS and reported internal consistency to range from .60 to .73. The correlation between positive and negative affect was also low ($r = .06$; Stacey & Gatz, 1991). Stacy and Gatz (1991) acknowledged that positive and negative affect showed good convergent validity with the Center for Epidemiological Studies of Depression Scale (CES-D; Radloff, 1977) and with the Brief Symptoms Inventory (BSI; Derogatis & Melisaratos, 1983). Finally, 14-year stability coefficients for negative affect were determined to be more stable across all old and very old age groups than coefficients for positive affect (Stacy & Gatz, 1991).

Key findings of measurement equivalence using the BABS have also been reported (Maitland, Dixon, Hultsch, & Hertzog, 2001). Maitland et al. (2001) reported that longitudinal comparisons showed a lack of measurement equivalence pertaining to the pleased items (e.g., pleased about having accomplished something), as well as the upset items (e.g., vaguely uneasy or upset) among old-old adults. In addition, Maitland et al. (2001) acknowledged that factor correlations displayed only moderate stability across 3 years, thus indicating significant individual change in affect. Maitland et al. (2001) concluded that investigators should not be deterred from using all 10 items of the BABS. However, use of cumulative or summary scores may be problematic in studies that involve very old adults (Maitland et al., 2001). Nonetheless, the BABS is a brief scale easily administered within a short period of time. This may be advantageous for investigators wishing to garner pilot or cross-sectional data on old-old adults.

Philadelphia Geriatric Morale Scale – Revised

The Philadelphia Geriatric Morale Scale – Revised (PGMS-R; Lawton, 1975) is a 17-item scale used to evaluate three components of psychological well-being: agitation, attitude toward aging, and feelings of loneliness and dissatisfaction. The PGMS-R was also established as an alternative measure to the LSI-A. Lawton (1975) specifically designed the PGMS to be a comprehensible and user-friendly measure for very old adults. In particular, all items are scaled on a dichotomous (i.e., yes or no) response format. Original

Cronbach's alpha for the PGMS included .84 for the agitation items, .81 for the attitude toward aging items, and .85 for the lonely-dissatisfaction items (Lawton, 1975). Lawton (1975) also reported that the PGMS items correlate well with indicators of physical health, engagement in activities, social relations, and functional ability.

More recent reports on the psychometric characteristics of the PGMS-R have confirmed original findings. For instance, Adkins, Martin, and Poon (1996) reported Cronbach's alpha of the full PGMS-R scale at .83 across a sample of sexagenarians, octogenarians, and centenarians. Martin et al. (1996) also computed a separate test of reliability for centenarians. This yielded an internal consistency of .81 across PGMS-R items. Furthermore, Martin, Grünendahl, and Martin (2001) reported Cronbach's alphas for the three separate subscales: agitation, attitude toward own aging, and lonely and dissatisfaction in a cross-sectional investigation in Germany. In particular, they reported alpha reliabilities of .70, .65, and .70, respectively. Finally, Anstey, Burns, von Sanden, and Luszcz (2008) acknowledged test-retest reliabilities of the PGMS-R to range from .81 and .82 at each wave of an 8-year population-based study that included a subsample of adults 85 years of age and older. Thus, the PGMS-R appears to maintain strong reliability within cross-sectional and longitudinal examinations involving exceptionally old adults.

Furthermore, the PGMS-R subscales have demonstrated a wide range of significant interitem correlations relative to satisfaction with activities ($r = .17$ to $r = .31$), quality of social contacts ($r = .16$ to $r = .30$), and stressors linked to health ($r = -.20$ to $r = -.36$), finances ($r = -.18$ to $r = -.26$), and the environment ($r = -.10$ to $r = -.12$; Martin et al., 2001). The PGMS-R items have also maintained associations with social network characteristics in late and very late life (Fiori, Smith, & Antonucci, 2007). In particular, Fiori et al. (2007) reported significant interitem correlations between the PGMS-R items and social network size ($r = .10$), frequency of contact with family ($r = .09$), number of social activities ($r = .17$), instrumental support ($r = -.20$), emotional support ($r = -.16$), and satisfaction with family and friends ($r = .23$). In effect, the PGMS-R appears to be a flexible measure offering nice utility with key indicators of well-being in late life.

However, investigators should be aware that Liang and Bollen (1983) restructured the PGMS into a 15-item inventory based on empirical evidence that the PGMS-R can be used as a multidimensional or unidimensional measure. Furthermore, Liang, Lawrence, and Bollen (1986) reviewed the factor structure of the 15-item scale and verified it to be invariant across age

and gender in older adult samples (Liang, Lawrence, & Bollen, 1986). Use of the 15-item version has increased in recent years. This is especially true in cases where the scale was adapted as a brief instrument to assess oldest-old adults (Anstey et al., 2008; Fiori et al., 2007; Wong, Woo, & Ho, 2005; Wong, Woo, Hui, & Ho, 2004). Initial evidence suggests that the PGMS-R consists of a two-factor structure that may work better with old-old sample populations (Wong et al., 2004). However, further testing is needed.

SECOND-GENERATION MEASURES

Classical measures of subjective well-being have been criticized for excluding global judgment of life satisfaction (Diener, Emmons, Larsen, & Griffin, 1985). This has resulted in second-generation measurement tools designed to capture global cognitive-affective or subjective judgments of life. Three instruments have had relative success as measures of subjective well-being among old and very old adults.

Satisfaction with Life Scale

The Satisfaction with Life Scale (SWLS; Diener, Emmons, et al., 1985) was designed to be a brief multi-item and global evaluation of life satisfaction. This measure is a five-item scale consisting of three factors: positive affect, negative affect, and satisfaction. Each item is rated on a seven-point scale (1 = strongly disagree; 7 = strongly agree). The SWLS has been confirmed to measure a single construct: life satisfaction (Pavot & Diener, 1993; Shevlin & Bunting, 1994). The SWLS was initially administered to young adult samples and to an older adult sample. Relative to the young adult samples, the SWLS evinced strong reliability, with a 2-month test retest coefficient of .82 and coefficient alpha of .87 (Diener, Emmons, et al., 1985). Internal consistency across items ranged from $r = .61$ to $r = .84$ (Diener, Emmons, et al., 1985). In addition, the SWLS was reported to demonstrate sound validity, as indicated by intercorrelations across other measures of well-being, including Cantril's (1965) self-anchoring ladder ($r = .57$ to $r = .58$), Bradburn's (1969) Positive Affect Balance Subscale ($r = .50$ to $r = .51$), and Bradburn's (1969) Negative Affect Balance Subscale ($r = -32$ to $r = -37$) (Diener, Emmons, et al., 1985). Furthermore, Diener, Emmons, et al. (1985) reported the SWLS to be strongly correlated with personality measures including self-esteem ($r = .54$), symptom checklist ($r = -.41$), neuroticism ($r = -.48$), emotionality ($r = -.25$), activity ($r = .08$), sociability ($r = .20$), and impulsivity ($r = -.03$).

Original psychometric testing of the SWLS with the older adult sample was not as extensive and consisted of a relatively small convenience sample ($N = 53$) of older persons with an average age of 75 (Diener, Emmons, et al., 1985). Nonetheless, item-total correlations between the five SWLS items ranged from $r = .61$ to $r = .81$ (Diener, Emmons, et al., 1985). Thus, the SWLS demonstrated good internal consistency across items when used with older adults.

Since its initial psychometric development, the SWLS has been tested for factorial invariance across multiple age groups (Pons, Atienza, Balaguer, & García-Merita, 2000). Although dimensionality of the SWLS appeared to remain the same across young and old age groups, Pons et al. (2000) indicated that the SWLS exhibited age sensitivity relative to the item reflecting whether the conditions of life were excellent. In particular, older respondents tended to vary significantly on this item when compared with persons of younger age.

Relative to old-old adults, the SWLS has demonstrated good utility. For instance, Shmotkin, Berkovich, and Cohen (2006) used the SWLS in a study of old and very old Israelis, many of whom were survivors of the Holocaust. In this study, the SWLS had a reported alpha reliability of .66. Shmotkin et al. (2006) acknowledged that a lower than expected scale reliability may have been due to an oral interview format rather than a standard self-administered survey. It is plausible that internal consistency of the SWLS may be hindered because of methodological procedures. However, investigators conducting other culturally based studies with old and very old adults residing in the Netherlands (Steverink & Lindenberg, 2006) and in Germany (Westerhof & Barrett, 2005) have reported internal consistency of the SWLS to be strong at $\alpha = .85$ and $\alpha = .86$, respectively. Further investigation and comparison across cultures is needed to confirm Shmotkin et al.'s (2006) methodological hypothesis.

Although the SWLS has been used to assess life satisfaction of oldest-old adults, the SWLS has primarily served as a measure of life satisfaction in young adulthood and middle adulthood (Vassar, Ridge, & Hill, 2008). Most important, many investigators who have used the SWLS with older adults have failed to report psychometric properties such as reliability and validity (Vassar et al., 2008). Therefore, it is difficult to make a confident final determination of scale utility in exceptionally old populations. Nonetheless, the SWLS is an effective brief measure of life satisfaction that can be easily administered using an oral interview or self-report format with high functioning or frail older persons. As a result, investigators are encouraged to integrate this brief measure into future research involving old-old adults.

Subjective Happiness Scale

An alternative measure to the Diener, Emmons, et al. (1985) Satisfaction with Life Scale is the Subjective Happiness Scale (SHS; Lyubomirsky & Lepper, 1999). This measure was constructed as a global subjective assessment of happiness. The scale consists of four items using seven-point Likert-scale formats. One item used to evaluate unhappiness is reverse coded. A single composite score of subjective happiness is then computed by averaging responses across the four items (Lyubomirsky & Lepper, 1999).

The SHS was validated using 14 different studies across multiple samples representing varying ages and cultures (Lyubomirsky & Lepper, 1999). Test-retest reliability across studies of the SHS ranged from .79 to .94. Relative to construct validity across studies, Lyubomirsky and Lepper (1999) reported that the SHS correlated highly with other happiness scales such as the Bradburn Affect Balance Scale ($\alpha = .52$ to $\alpha = .64$) and the Satisfaction with Life Scale ($\alpha = .61$ to $\alpha = .72$). Furthermore, correlations between the SHS and other theoretically and empirically related happiness and well-being constructs (e.g., self-esteem, optimism, emotionality, extraversion, neuroticism, depression) did not exceed $r = .70$. Lyubomirsky and Lepper (1999) concluded that the SHS maintains strong reliability across time and is unique to other happiness measures.

It is important to note that Lyubomirsky and Lepper (1999) originally tested the SHS using a large retirement community sample of 622 older adults. Cronbach's alpha of the SHS relative to this population was reported to be .86. However, investigators have not extensively used the SHS to assess happiness in old or very old populations. Lee and Im (2007) conducted one of the few aging studies in which SHS served as the primary happiness measure. This investigation involved a cross-sectional sample of 140 Korean elderly, age 60–88. Lee and Im (2007) adapted the four items to the Korean language and reported a Cronbach's alpha coefficient of .76. In effect, the SHS seems to demonstrate strong reliability when used in older adult populations. Further testing and use of the SHS in research involving exceptionally old adults is recommended. The SHS contains a very brief protocol of items to assess happiness. Investigators may find this advantageous when conducting research with frail old-old adults who may experience high levels of mental fatigue during interview or self-report processes.

The Positive and Negative Affect Schedule

The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) was constructed as a brief evaluation of high-arousal emotions

that elicit positive and negative affect. The scale consists of 10 positive adjectives (e.g., *alert, excited*) and 10 negative adjectives (e.g., *upset, jittery*). Respondents are usually asked to rate the degree to which each adjective describes how they felt on a five-point Likert scale (1 = very slightly or not at all; 5 = extremely). Watson et al. (1988) originally administered, tested, and compared this scale across six different time-oriented ratings of emotionality, including at the moment, during the day, over the past few days, during the past few weeks, over the past year, and in general. Interitem reliabilities among positive affect ratings ranged from .86 (e.g., year) to .90 (e.g., general), whereas internal consistency among negative affective items ranged from .84 (e.g., year) to .87 (e.g., general, past few weeks, today). Thus, the PANAS demonstrated high internal consistency across different time orientations. In addition, Watson et al. (1988) reported test-retest reliabilities of time-oriented ratings of positive affective adjectives to range from .47 (e.g., today) to .68 (e.g., general). Test-retest reliability for time-oriented negative affective adjectives ranged from .39 (e.g., today) to .60 (e.g., year). Finally, interitem correlations between positive and negative affective adjectives ranged from $r = -.15$ to $r = -.23$, thus indicating two distinct constructs (Watson et al., 1988).

The PANAS has been widely adopted to assess emotionality of old-old adults residing in Germany. For example, Isaacowitz and Smith (2003) used the PANAS to examine positive and negative affect in a large sample ($N = 516$) of German residents aged 70–100+ years of age ($M = 85$ years) from the Berlin Aging Study (BASE). Cronbach's alphas were reported to be relatively high for the 10 positive affect items ($\alpha = .78$) and the 10 negative affect items ($\alpha = .81$). Isaacowitz and Smith (2003) acknowledged that the PANAS subscales were associated with personality and intellectual functioning in the oldest old. In particular, extraversion was reported to have a positive association with positive affect ($\beta = .39$, $p < .01$), whereas neuroticism ($\beta = .65$, $p < .01$) and general intelligence ($\beta = .39$, $p < .01$) were predictive of negative affect (Isaacowitz & Smith, 2003). Thus, personality and general intelligence variables appear to be useful in predicting positive and negative affect items of the PANAS.

The PANAS has also demonstrated good convergent validity in studies involving oldest-old adults. In particular, Kunzmann, Little, and Smith (2000) reported that a single-item indictor of life satisfaction was positively associated with positive affect ($r = .35$, $p < .01$) but negatively related to negative affect ($r = -.33$, $p < .01$). Similarly, Steverink and Lindenberg (2006) indicated evidence of convergent validity between the PANAS subscales and the Satisfaction with Life Scale (SWLS; Diener, Emmons, et al., 1985). Life

satisfaction scores on SWLS were positively associated with positive affect items of the PANAS ($r = .32$, $p < .01$) and negatively associated with negative affective items ($r = -.39$, $p < .01$). In effect, PANAS works well with measures of life satisfaction. Therefore, investigators studying life satisfaction in very old age should seriously consider using the PANAS scale. The measure appears to be psychometrically sound and is easily administered in old-old populations.

Ryff Scales of Psychological Well-Being

The Ryff Scales of Psychological Well-Being (Ryff, 1989a, 1989b; Ryff & Keyes, 1995) were constructed to provide a theoretically derived set of six distinct self-report instruments to assess dimensions of psychological well-being: self-acceptance, positive relationships with others, autonomy, purpose in life, personal growth, and environmental mastery. Respondents are typically asked to provide a ratings on a six-point scale (1 = strongly disagree; 6 = strongly agree). Ryff (1989) originally computed item-to-scale correlations to create six separate 20-item scales (Ryff, 1989a). Original internal consistency or alpha coefficients for the 20-item scales were reported as self-acceptance, .93; positive relations with others, .91; autonomy, .86; environmental mastery, .90; purpose in life, .90; and personal growth, .87 (Ryff, 1989a). Test-retest reliability coefficients of the original 20-item scales over a 6-week period were reported as self-acceptance, .85; positive relations with others, .83; autonomy, .88; environmental mastery, .81; purpose in life, .82; and personal growth, .81 (Ryff, 1989a). Furthermore, construct validity with other theoretically derived scales of well-being was considered. Ryff (1989a) reported the range of intercorrelations of the six dimensions with other measures: Bradburn Affect Balance Scale (Bradburn, 1969), .25 to .62; Life Satisfaction Index-A (Neugarten et al., 1961), .26 to .73, and the Zung Depression Scale (Zung, 1965), $-.33$ to $-.60$.

The six psychological well-being scales were further operationalized into six 14-item scales (Ryff, Lee, Essex, & Schmutte, 1994). Similar to previous analyses (Ryff, 1989a, 1989b), items were selected on the basis of item-to-scale coefficients (Ryff et al., 1994). Correlations between the original 20-item scales and the 14-item scales ranged from .97 to .98 (Ryff et al., 1994). Internal consistency of the reduced item scales ranged from .82 to .90 (Ryff et al., 1994). Furthermore, test-retest reliability of the 14-item scales over a 6-week period ranged from .81 to .88 (Ryff et al., 1994). Ryff et al. (1994) also noted that the 14-item scales correlated positively with established measures of positive well-being (e.g., life satisfaction, affect

balance, and self-esteem) and negatively with measures of depression and external control. In addition, intercorrelations between the six 14-item scales were reported to range between .32 and .76 (see Ryff et al., 1994).

Ryff and Keyes (1995) retested the factor structure of the six psychological well-being constructs across the original 20-item scales, the 14-item shortened versions, and 3-item indices. All scales demonstrated psychometric properties appropriate for aging research (see Ryff & Keyes, 1995). Confirmatory factor analysis was also used to examine latent constructs. Reported interitem correlations among the latent constructs ranged from .24 to .85 (Ryff & Keyes, 1995). Correlations of the six latent dimensions were then examined to establish convergent validity. Ryff and Keyes (1995) reported correlations between the six dimensions and single-item measures of happiness (e.g., how much time during the past month participants felt happy) and life satisfaction (e.g., how things were going in life), as well as depression, using an eight-item version of the CES-D (Radloff, 1977). Correlations ranged from .31 to .54 and from .21 to .64, respectively, on the single-item measures of happiness and satisfaction, whereas correlations between the six scales and the CES-D ranged from $-.22$ to $-.70$ (Ryff & Keyes, 1995).

Administration of the Ryff Scales of Psychological Well-Being primarily originated with the 1995 National Survey of Midlife Development in the United States (MIDUS; Greenfield & Marks, 2004, 2007; Keyes, Shmotkin, & Ryff, 2002). This study has concentrated on the well-being of young and middle-aged persons, with sample participants ranging from age 25 to 74. The extent to which alpha reliability, predictive or convergent validity, or factor structure among a sample of old-old adults would yield consistent or comparable findings remains unknown. Certain subscales do appear to work well with old and very old adults. For example, Bishop (2006) used the 14-item personal growth subscale from Ryff's Psychological Well-Being Scales with old and very old men and women residing in Benedictine Order religious monasteries. Cronbach's alpha for the personal growth scale in this study was reported at .80 (Bishop, 2006). Although the personal growth subscale demonstrated strong reliability, further integration and testing of the Ryff Scales of Psychological Well-Being in secular and nonsecular (e.g., individualistic vs. collectivistic) old-old populations is warranted.

Implementation of the 20-item or 14-item versions of all six scales in research with old-old adults may create a risk of mental fatigue. Researchers are advised to be selective as to which of the six subscales to use. Relative to large sample surveys involving special older populations, the

three-item index of the Ryff Scales of Psychological Well-Being may work best (Greenfield & Marks, 2007). However, application of the Ryff scales in exceptionally old populations needs to be expanded for improved understanding of psychometric properties and user feasibility.

DOMAIN-SPECIFIC MEASURES

As second-generation measures continue to be used in advancing the science of subjective well-being research, it remains important that aging researchers consider the cultural-domain (see Chapter 15). Domain experiences elicit a retrospective or immediate judgment of satisfaction with life, which further influences an adult's memory of an event, affective emotions, or interpersonal relationships (Kahneman & Krueger, 2006). For example, happiness may be judged as the difference between what persons were able to achieve through work (e.g., income, wealth) versus what they aspire to attain in retirement (e.g., health, economic security; Diener & Biswas-Diener, 2008). The net effect of this judgment on subjective well-being is greatest when individuals are able to remain engaged in work, to invest in close family ties, or to pursue personally meaningful activities (e.g., attending church or other social functions; Kahneman & Krueger, 2006). Therefore, domain measures of work and retirement satisfaction, housing satisfaction, family solidarity, satisfaction with church, purpose, and meaning are relevant to the well-being of old-old adults.

RETIREMENT SATISFACTION

Retirement Descriptive Index

The Retirement Descriptive Index (RDI; Smith, Kendall, & Hulin, 1969) is a classical measure originally designed to evaluate affective responses to retirement. The RDI consists of 63 items representing four dimensions of retirement satisfaction: activities and work (e.g., sense of accomplishment), finances (e.g., satisfactory), health (e.g., never felt better), and interpersonal relations (e.g., stimulating). Respondents are asked to indicate whether each item reflects their current retirement situation using dichotomous ratings (0 = no; 1 = yes). Smith et al. (1969) reported interitem correlations across dimensions to range from .19 to .43 in a sample of men. Smith and colleagues (1969) also recognized that older retirees maintain low satisfaction scores on the RDI. However, Smith et al. (1969) failed to provide detailed psychometric

information of internal consistency relative to original construction of the RDI.

Dorfman, Kohout, and Heckert (1985) used the RDI to assess retirement satisfaction among rural older adults and reported a Cronbach's alpha of.85. Dorfman et al. (1985) also reported that the RDI evinces high subscale reliabilities relative to activities ($\alpha = .78$), finances ($\alpha = .74$), health ($\alpha = .74$), and interpersonal relations ($\alpha = .77$). Furthermore, Dorfman et al. (1985) confirmed that personal characteristics, including perceived health ($r = .37$), functional health ($r = .19$), and monetary spending ($r = -.24$), maintain strong predictive associations with overall RDI scores.

In an alternative use of the RDI, MacEwen, Barling, Kelloway, and Higginbottom (1995) adapted only two subscales – financial satisfaction and satisfaction with activities – in a study of middle-age adults. MacEwen et al. (1995) transformed these subscales into dichotomous items to assess expected satisfaction in retirement. Internal consistency of the financial and activity subscales was reported to be $\alpha = .78$ and $\alpha = .79$, respectively. MacEwen et al. (1995) also summed three additional items of the RDI (i.e., expected change in marital relationship, mood, self-esteem following retirement) to assess overall well-being in retirement but reported a lower than expected Cronbach's alpha of .62. Low reliability of this three-item global index most likely reflected the use of few items. However, the MacEwen et al. (1995) application of the RDI suggests that the RDI offers flexibility when using brief subscales or easily administered item ratings. However, use of the RDI has remained limited, and knowledge regarding psychometric properties or factorial structure relative to old-old populations is unclear. Thus, an opportunity exists to retest the measurement properties and factorial structure in a contemporary sample of old-old adults.

Retirement Satisfaction Index

A more widely accepted measure of retirement satisfaction in aging research is the Retirement Satisfaction Index (RSI, Floyd et al., 1992). Floyd et al. (1992) derived the RSI based on life-span development theory and life-span transition theory. The RSI includes a 51-item questionnaire consisting of six dimensions: preretirement work functioning (e.g., retrospective report of work-related activities and job involvement), adjustment and change (e.g., perception of stress associated with event of retirement), reasons for retirement (e.g., voluntary and involuntary control over retirement), satisfaction

with life in retirement (e.g., satisfaction and dissatisfaction with retirement), sources of enjoyment (e.g., access to economic and social provisions), and leisure and physical activities (e.g., continuity of skills, hobbies, and behaviors). The RSI also involves use of separate four-point (1 = unimportant; 4 = important) and six-point (1 = very ungratifying; 6 = very gratifying) Likert-type ratings across various items.

Floyd et al. (1992) conducted a series of factor analyses on three sections of questions to achieve three factor-analytically-derived subscales. Tested subscale items included questions measuring reasons for retirement (15 items), satisfaction with life in retirement (11 items), and sources of enjoyment (15 items). Remaining items reflecting other subscales were treated as single-item scores. Cronbach's alpha across the three factor-analytically-derived subscales was reported at .81 (Floyd et al., 1992). Test-retest reliability over a 14-day interval ranged from $r = .56$ to $r = .77$ for multiple items representing the three factor-analytic subscales and $r = .45$ to $r = .71$ for single-item ratings (Floyd et al., 1992). Furthermore, Floyd et al. (1992) reported concurrent validity of the overall mean satisfaction score, the three subscale scores, and the global rating of retirement satisfaction for the Satisfaction with Life Scale (SWLS; Diener, Emmons, et al., 1985) and the Marital Satisfaction Questionnaire for Older Persons (MSQOP; Haynes et al., 1992). Correlations for the SWLS ranged from $r = .30$ to $r = 48$, whereas correlations associated with the MSQOP ranged from $r = .32$ to $r = .56$. Thus, specificity of RSI factor scores was supported.

There is evidence that RSI is a culturally competent measure. In particular, the RSI has demonstrated strong utility across older adult samples from European Union countries (Fouquereau, Fernandez, Fonseca, Paul, & Uotinen, 2005; Fouquerequ, Fernandez, & Mullet, 1999; Stephen, Fouquereau, & Hernandez, 2008). Fouquereau et al. (1999) retested the factor structure of RSI using a French sample and confirmed support of the factors derived from Floyd et al. (1992) reflecting reasons for retirement, satisfaction with life in retirement, and sources of enjoyment. Furthermore, Fouquereau et al. (2005) reported the RSI to be a successful measure of global retirement satisfaction across six countries, including Belgium, Finland, France, Portugal, Spain, and the United Kingdom.

In effect, the RSI represents a useful measure for cross-cultural comparison. Although it may potentially be a time-intensive instrument to administer with old-old samples, researchers may still want to consider using one or all three of the factor-analytically-derived subscales (e.g., reasons for retirement, satisfaction with life in retirement, and sources of enjoyment). Use

of the three subscales will reduce the number of self-report items without compromising scale integrity (Floyd et al., 1992).

Work-Control Index

Although labor participation has continued to decline among old-old persons, there has been continued growth in the number of old and very old adults who may continue to work part-time or volunteer in various jobs (Choi, 2003). Jopp and Rott (2006) reported evidence that past acquisition of skill and abilities through formal job training continues to influence feelings of optimism and happiness into exceptional old age. Thus, it may be valuable to assess how old-old adults reconstruct their work lives to deriving a mastery over well-being. Work-control items from the Job Content Questionnaire (JCQ; Karasek & Theorell, 1990; Karasek et al., 1998) represent a measurement index that has proved useful for evaluating perceived control and satisfaction in work. In particular, work-control items of the JCQ were designed to assess the degree to which individuals felt content with the way work matches their education, skills, training, and desired autonomy. Sample items include "My job allows me to use my skills and abilities" and "My job matches what I like to do." All items are rated on a five-point Likert scale (1 = strongly disagree; 5 = strongly agree). Items representing the work-control index of the JCQ have demonstrated good psychometric reliability in aging research. Cronbach's alpha has been reported to range from .59 to .86 among male study participants representing workers in the United States, Canada, the Netherlands, and Japan. For female workers from those same countries, the work-control index of the JCQ has a reported alpha reliability ranging from .64 to .85. Furthermore, Karasek et al. (1998) reported interitem correlations across work-control index items to range from $r = .37$ to .62 among male and female workers from different countries. Thus, work-control items from the JCQ evince high reliability and strong interitem correlations across culturally diverse and gender specific samples.

Wickrama, Surjadi, Lorenz, and Elder (2008) adopted an eight-item work-control index from the JCQ to investigate work-control trajectories among middle-aged and older men across three measurement waves. Coefficient alphas for each measurement wave were reported at .83, .84, and .81, respectively. Thus, the JCQ appears to be a strongly reliable measure across time. We recommend that investigators further test and incorporate the eight-item work control index in studies involving old-old adults who may continue to work or engage in volunteer service. This index provides a brief and easy way to evaluate work-related happiness and well-being in

advanced old age. Furthermore, it has the potential to offer a contemporary assessment of how old-old adults may reframe perceived productivity relative to feeling satisfied with life.

HOUSING SATISFACTION

Most old-old adults continue to age in place after retirement. In effect, housing often becomes a reflection of individual satisfaction in very old age (Oswald, Schilling, et al., 2006; Oswald, Wald, et al., 2007). Housing satisfaction can be conceptualized as a complex outcome of health-related well-being and a objective and subjective indicator of satisfaction with the environment, but a readily available psychometric or standardized assessment tool does not exist (Pinquart & Burmedi, 2004). Instead, contemporary measurement of housing satisfaction has been limited to a single-time indicator adapted from the Housing Options for Older People (HOOP) questionnaire (Heywood, Oldman, & Means, 2002). In particular, respondents are asked the following question: "Are you happy with the condition of your home?" Responses are typically scored on a five-point Likert scale (1 = definitely not; 5 = yes, definitely). Oswald, Wald, et al. (2007) reported patterns in which housing satisfaction was related to autonomy among old-old adults residing in Sweden ($r = .47$) and Germany ($r = .66$). In an earlier investigation, Oswald, Schiller, et al. (2006) reported that housing satisfaction maintained a mean of 4.62 with a standard deviation of 1.46 across a sample of $N = 1223$ older adults, age 80–89, from Sweden, Britain, and Germany. Furthermore, Oswald, Schiller, et al. (2006) examined the factor structure of perceived housing domains. Housing satisfaction maintained a factor loading of .96. Oswald, Schiller, et al. (2006) concluded that housing satisfaction is one of four key domains of perceived housing among older adults residing in various cultural settings. Other domains included meaning of home, usability, and housing control beliefs. Despite these findings, researchers should expand on this current work. In particular, a more sophisticated psychometric assessment of housing satisfaction is needed to compare with the more often used single-item indicator.

FAMILY SOLIDARITY

Positive Affective Index

The Family Solidarity Inventories (Bengston & Lovejoy, 1973) were originally developed as separate measurement indices to assess two primary

dimensions of intergenerational relations: affection (e.g., degree of positive sentiment toward family members) and association (e.g., degree to which family members engage in the interaction, sharing, or exchange or activities) (see Mangen, Bengston, & Landry, 1988). Both measurement indices were also created for the purposes of assessing family cohesion across two or three living generations (Mangen & Peterson, 1982; Mangen et al., 1988).

To assess positive affective family solidarity, Bengston and Lovejoy (1973) established the Positive Affective Index (PAI). This is a 10-item scale designed to assess feelings of positive sentiment or affect among family members as perceived and reported by family members. The PAI is used to evaluate five dimensions: (a) understanding, (b) fairness (c) trust, (d) respect, and (e) affection. Additional single-item questions include quality of communication among family members, sense of closeness, and getting along. All items are rated on a six-point Likert scale (1 = not well; 6 = extremely well). Scores are generally summarized across items to provide an index of positive affect. Original dimensionality was assessed using a sample of 100 older adult parent–adult child dyads (Mangen & Peterson, 1982). Moderate to high homogeneity was reported across items. In particular, interitem correlations ranged from .41 to .73. Factor analyses of items also resulted in uniform loadings (.60 to .80). Finally, Bengston and Black (1973) reported a strong Cronbach's alpha of .92.

Construct validity of PAI items has been assessed for indicators reflecting interaction frequency among the two generations. All index items were reported to load highly on the same factor relative to different types of interaction among family members (.50 to .85) (Mangen & Peterson, 1982). In addition, construct validity was tested by separating the two generations. High factor loadings were determined relative to the oldest (G1: .60 to .84) and the younger generation (G2: .56 to .78) (Mangen & Peterson, 1982).

The PAI has demonstrated good utility in more recent intergenerational investigations. For instance, Long and Martin (2000) considered relationship closeness among oldest-old adults and their children. They reported a Cronbach's alpha of .92 across old-old parents and .96 among older adult children. In addition, Goodman and Silverstein (2002) investigated a sample of grandmothers raising grandchildren. The coefficient alpha for positive affectual solidarity in that study ranged from .83 for the grandmother-grandchild relationship to .93 and .95 for other relationships. Internal consistency has also been reported to be strong in other studies that considered level of affection between adult children and older adult mothers (.93) and fathers (.91) (Silverstein, Conroy, Wong, Giarrusso, & Bengston, 2002).

Furthermore, some investigators have demonstrated success in using a three-item index of the PAI. For instance, Silverstein, Cong, and Li (2006) used an adapted three-item version of the PAI with a sample of older adults residing in rural China. Silverstein et al. (2006) reported a reliability coefficient of .82 for this adapted form. Thus, the PAI appears to work well across young, old, and very old family members and is easily adaptable as a brief measurement index in other cultures.

Family Interaction Index

Bengston and Lovejoy (1973) also framed a family interaction index (FII) to compliment the PAI (see Mangen et al., 1988). This instrument consists of a 12-item checklist designed to measure the type and frequency of informal (e.g., recreation outside the home activities representing informal) and ceremonial (e.g., family gatherings) family activities. Activities were categorized around five dimensions: (a) interactions outside the home, (b) visitation and conversation, (c) family get-togethers, (d) written or spoken communication, and (e) exchange of gifts or assistance. Respondents are typically asked to indicate how often they engage in various activities with an identified family member using an eight-point Likert scale (1 = almost never; 8 = almost every day). One additional item is used to assess proximity or the distance the respondent lives from the target individual. This item is used as a reflective indicator to determine which activities may be more or less salient for the older family member (Mangen & Peterson, 1982). Original Cronbach's alpha for ceremonial and informal family activity subscales was reported to be .58 and .89, respectively, whereas test-retest reliability of the full index over a 4-week period was reported at .81 (Bengston & Black, 1973). Despite good internal consistency, investigators should remain aware that the types of activities used in the FII may carry divergent levels of meaning and importance across various families living in various cultural contexts (Mangen & Peterson, 1982). In other words, the FII may have limited measurement utility in diverse family systems.

Other investigators have noted that the FII demonstrates strong reliability across old and very old adults. For instance, Long and Martin (2000) reported an internal consistency of $\alpha = .71$ among old-old parents and $\alpha = .73$ among their adult children. Furthermore, Silverstein et al. (2002) reported scale reliability to range from .88 to .90 for time spent in activities with older adult fathers and mothers, respectively. Finally, interitem correlations between items of the PAI and items from the FII have been

reported to range from .29 to as low as .01 (Silverstein et al., 2002). According to Silverstein et al. (2002), this indicates that affectual and associative forms of solidarity are unique ways in which older adult parents invest in relationships with their adult children. Thus, researchers are advised to treat and measure items reflecting affectual solidarity and family interaction independently.

RELIGIOSITY AND SPIRITUALITY

Beyond the family context, religiosity represents a central domain of health, happiness, and well-being (Koenig, 1998; Koenig, McCullough, & Larson, 2001. The oldest old often represent the "forgotten" aged in religious faith communities (Dickerson & Watkins, 2003). Most religiosity scales have been designed to measure organized religious activities and rituals, including church attendance or frequency of engagement in religious activities (Hill & Wood, 1999). Although old-old members want to attend church or synagogue as well as engage in religious activities, many are limited by physical frailty (e.g., poor vision and hearing, mobility problems) or resource deficits (e.g., transportation, pastoral senior programs and services) that restrict participation. Some old-old members of religious congregations may become disenfranchised with organized religion to the point of feeling dissatisfied with clergy, lay members, or other church-affiliated programs or outreach services (Dickerson & Watkins, 2003). In effect, many may desire to turn away from formal religious institutions and engage in more solitary existential pursuits (e.g., private or contemplative prayer, forming a relationship with God or the Divine) to find meaning and fulfillment in what lies beyond themselves. Thus, alternative religiosity and spirituality measures that more directly focus on happiness or satisfaction are needed.

Congregational Satisfaction Questionnaire

The Congregation Satisfaction Questionnaire (CSQ; Silverman, Pargament, Johnson, Echemendia, & Snyder, 1983) is a psychometric measure designed to assess member satisfaction with church or synagogue. The CSQ was originally normed using a sample of 353 members across 13 congregations from Roman Catholic and Protestant churches ranging from 100 to 6,200 members. In addition, the scale was designed to be applicable in investigations involving members of Jewish synagogues. Silverman et al. (1983) reported a mean sample age of 44 years among participants, indicating an average length of membership of 18 years.

The original CSQ consisted of eight subscales. For each dimension, respondents were asked to rate how accurately words or short phrases described their congregation. Respondents were asked to rate items on a three-point Likert scale (0 = no, 1 = yes, and 3 = uncertain). Silverman et al. (1983) reported an alpha reliability ranging from .67 to .90, with a test-retest reliability range of .62 to .82. Convergent validity was established between the measured subscales and reported to range from $r = .32$ to $r = .43$. Each of the scales also maintained significant correlations with at least one or more demographic or religiosity indicators (i.e., age, education, frequency and number of religious activities, frequency of attendance, number of close members, frequency of prayer, and importance of religion). Furthermore, all subscales maintained small but significant correlations with life satisfaction, ranging from $r = .13$ to $r = .24$. According to Silverman et al. (1983), this finding demonstrated evidence of the interrelatedness between the religious domain and life satisfaction.

It is important to note that the original CSQ was revised. Several revisions were made to the original scale, including the omission of one subscale, the introduction of several new and additional items across subscales, and a change in the response option from a three-point to five-point Likert scale (1 = not at all; 5 = completely; Brant, Jewell, & Rye, 1999). The revised CSQ resulted in a 70-item scale that asks respondents to rate 10 positively and negatively worded phrases across seven dimensions. The revised CSQ has demonstrated improved reliability across the seven newly established subscales: religious services ($\alpha = .85$), members ($\alpha = .85$), special programs and services ($\alpha = .79$), child education ($\alpha = .85$), adult education ($\alpha = .88$), leaders ($\alpha = .82$), and facilities ($\alpha = .94$; Brant et al., 1999). On the basis of this information, it appears that the CSQ is a reliable and valid measure of congregation satisfaction. Although there is no reported evidence that the CSQ has been widely or exclusively tested using older adult populations, the CSQ has strong face validity as a potentially useful evaluation of religious satisfaction in old-old age. In particular, researchers who conduct applied gerontological research might find the CSQ a worthwhile quantitative assessment to determine religious needs of old-old adults who maintain or desire an active religious life. However, investigators are advised to adopt the revised CSQ for greater reliability in outcomes.

Spiritual Well-Being Scale

The Spiritual Well-Being Scale (SWBS; Ellison, 1983; Paloutzian & Ellison, 1982, 1991) was developed as a 20-item global psychological measure of

self-reported spiritual well-being. Paloutzian and Ellison (1982) designed the SWBS to capture two key dimensions: (a) religious well-being (RWB), or the vertical dimension of perceived well-being of one's spiritual life as reflected by a relationship with God, and (b) existential well-being (EWB), or the horizontal dimension of perceived well-being of one's spiritual life as indicated in sense of purpose, life satisfaction, and positive or negative experiences. Each subscale contains 10 items rated on a six-point Likert scale (1 = strongly agree; 6 = strongly disagree). All RWB items contain the word *God* (e.g., "I don't find much satisfaction in private prayer with God"), whereas EWB items are more global and include no specific religious language (e.g., "I feel very fulfilled and satisfied with life"). Paloutzian and Ellison (1982) originally tested the SWBS using a sample of 206 college students. They reported a moderate correlation between RWB and EWB ($r = .32$) during the initial construction of the scale. Furthermore, Paloutzian and Ellison (1982) reported test-retest reliability over 1, 4, 6, and 10 weeks to range from .88 to .99 for RWB, .73 to .98 for EWB, and .82 to .99 for the full SWBS. Thus, it is evident that the SWBS evinces high internal consistency and reliability. For additional information regarding reliability norms across various empirical studies, researchers should refer to the manual for the SWBS (Paloutzian & Ellison, 1991) or work by Bufford, Paloutzian, and Ellison (1991).

Paloutzian and Ellison (1982) also conducted a factor analysis of scale items. They concluded that factors correspond to two subscales. In particular, RWB items clustered strongly together on one factor, whereas EWB items were more indicative of two subfactors reflecting life direction and satisfaction. Subsequent research has posed a more complex factor structure (Ledbetter, Smith, Fischer, & Vosler-Hunter, 1991). This is a result of ceiling effects, which tend to occur more in sample populations of evangelical religious orientations. Therefore, investigators need to be aware that the factorial structure of the SWBS may make interpretation of scores ambiguous across divergent religious orientations.

Relative to original findings on predictive validity, Ellison (1983) reported that the SWBS tends to share an association with measures used to evaluate mental and family well-being. For instance, the SWBS has been reported to be predictive of loneliness ($r = .37$ to $r = .55$), purpose in life ($r = .52$), self-esteem ($r = .16$ to $r = .44$), parent-child relationship quality ($r = .19$ to $r = .38$), and family closeness ($r = .26$ to $r = .34$). Thus, the SWBS tends to be an appropriate measure in research that focuses on mental health functioning as well as family relations.

Nonetheless, the SWBS is noted as one of the most widely adopted spirituality scales in clinical research (Boivin, Kirby, Underwood, & Silva, 1999). Although the SWBS has not been exclusively used to investigate spiritual well-being in old-old age, there is evidence to support its use in clinical aging research. This appears to be most true relative to health and caregiving outcomes. First, investigators have used the SWBS to assess spiritual well-being among middle-aged and older adults living with chronic illness (e.g., breast or prostate cancer) and disability (e.g., amputation, postpolio, spinal cord injury; Riley et al., 1998). Reported alpha reliabilities of .87 for RWB, .78 for EWB, and .89 for the full SWBS indicate the measure maintains strong reliability in clinical applications where sample participants may have chronic or age-associated physical or functional health problems (Riley et al., 1998).

In addition, the SWBS has been reported as a reliable measure among family members caring for terminally ill relatives (Kirschling & Pittman, 1989). Cronbach's alpha pertaining to EWB, RWB, and the full SWBS scale in this investigation were reported to be high at .95, .94, and .84, respectively. Furthermore, Kirschling and Pittman (1989) provided evidence that confirmed the predictive validity of the SWBS and mental health indicators. In particular, they reported a significant negative association between EWB and negative affect ($r = -.38$). Similarly, reliability of the full SWBS has also been reported as strong across a sample of Alzheimer's caregivers ($\alpha = .91$; Spurlock, 2005). Among this sample, the full SWBS was reported to be predictive of caregiver burden ($r = -.49$). In effect, clinical gerontologists and other aging researchers should consider adopting the SWBS to evaluate spiritual well-being among physically frail or terminally ill old-old adults and among their respective family care providers.

Gratitude toward God

Consideration of one's relationship with God is an additional and alternative way to evaluate contentment and satisfaction with life. Krause (2006) devised a brief four-item measure indicative of gratitude toward God. Krause (2006) specifically selected and modified indicators originating from an existing empirical research and measurement of gratitude in daily life (Emmons, McCullough, & Tsang, 2003). These indicators were used to form a construct reflective of one's appreciation for their relationship with God. Measurement items included (a) "I am grateful to God for all He has done for me," (b) "If I were to make a list of all the things God has done for me, it would be a very long list," (c) "As I look back on my life, I feel I have been

richly blessed by God," and (d) "I am grateful to God for all He has done for my family members and close friends." Krause (2006) used a restricted sample of older practicing Christians ($M = 77.6$ years, $SD = 6.0$ years) to evaluate the brief composite scale. Respondents were asked to rate their level of agreement using a four-point Likert scale (1 = strongly disagree; 4 = strongly agree). Krause (2006) reported internal consistency reliability of this brief composite scale to be $\alpha = .96$.

It is important to note that Krause and Ellison (2009) also derived a modified three-item version to assess gratitude with God. This composite index included all original items from Krause's (2006) implementation with exception of one item. In particular, the family-oriented item was omitted to create a more specific measure of gratitude toward God. Relative to psychometric properties, Krause and Ellison (2009) tested a measurement model in which the three-item index was used to create a measurable latent variable construct. Reported factor loadings across the three items were .87, .88, and .88, respectively, for feeling grateful to God, making a list of all things God had done, and feeling blessed. Thus, the modified three-item version appears to be useful in forming a latent construct reflecting gratitude toward God.

Although this short composite measure of gratitude toward God has not been widely used among old-old populations, it does provide a brief and alternative assessment that can be used to capture satisfaction derived from a religious or spiritual relationship with God. However, Krause (2006) highlighted a key shortcoming of the measure. In particular, the composite scale may not be comprehensive enough to be suitable for use among persons representing non-Western monotheistic religious traditions (e.g., Jews, Muslims).

MEANING IN LIFE

There has been a contemporary movement in gerontology toward the development of psychometric measurement tools that transcend religious and spiritual domains (Krause, 2009). Relative to the theory of gerotranscendence, Tornstam (2005) proposed that persons living exceptionally long lives experience a shift in perspective from a materialistic and pragmatic view of the world to a more transcendent and cosmic pursuit of meaning in old-old age. Krause (2009) posited meaning in life as a theoretical and measurable construct closely linked to subjective well-being. It represents a key source of satisfaction and happiness and is often expressed through feelings of gratitude in old-old age. When old-old adults are provided an

ability to achieve individual values, sense of purpose, personal goals, and reconciliation with the past, they feel more grateful and fulfilled for the positive and negative happenings of life (Krause, 2004, 2009). As highlighted in chapters by Shmotkin (Chapter 3), Martin, daRosa, and Poon (Chapter 7), and Hyer and Yeager (Chapter 8), life experiences tend to be crucial in the derivation of subjective well-being in old-old age.

The Gratitude Questionnaire – Six-Item Form (GQ-6)

The Gratitude Questionnaire – Six-Item Form (GQ-6; McCullough, Emmons, and Tsang, 2002) is a six-item self-report questionnaire designed to evaluate the experience of gratitude in everyday life. Respondents are typically asked to rate the six items using a seven-point Likert scale (1 = strongly disagree; 7 = strongly agree). Sample items include "I have so much in life to be thankful for" and "As I get older I find myself able to appreciate the people, events, and situations that have been part of my life history."

The GQ-6 was originally tested and developed across samples of undergraduate college students and community-dwelling adults. McCullough et al. (2002) used EQS and conducted confirmatory factor analyses that yielded a one-factor measurement model. This model was reported to have acceptable goodness-of-fit indices relative to the comparative fit index (.90 to .95), and standardized root mean residuals (.05 to .10). In addition, Cronbach's alpha estimates have been reported to range from .76 to .84 (Emmon, McCullough, & Tsang, 2003; McCullough et al., 2002). Thus, the GQ-6 evinces strong reliability across a unidimensional construct.

McCullough et al. (2002) also tested the construct validity of the GQ-6. Correlations between the GQ-6 and positive affective traits (e.g., positive emotionality, life satisfaction, vitality, optimism, hope) were reported to be positive and ranged from .30 to .50, whereas correlations with measures of negative affectivity, depression, and anxiety were negative and were reported to be less than or equal to .40. In other words, high scorers on the GQ-6 report more frequent positive emotions and lower levels of negative affect (Emmons et al., 2003). Furthermore, McCullough et al. (2002) noted that measures of the big-five personality traits accounted for an estimated 20 to 30% of variance across GQ-6 scores. In effect, the GQ-6 typically maintains significant associations with other measures designed to assess positive and negative emotionality as well as personality.

Although the GQ-6 appears to have good face validity, the original six-item version has had little to no application in aging research to date. This perhaps is because the GQ-6 is a relatively new measure. However,

Krause (2007b) reported using an adapted three-item version taken from the McCullough et al. (2002) scale in a large sample study of older adults originating from the Centers for Medicare and Medicaid Services beneficiary list. The adapted GQ-6 items included (a) "I have much in life to be thankful for," (b) "If I could list everything that I feel grateful for it would be a very long list," and (c)"I stop and count my blessings nearly every day." The three items were rated on a four-point Likert scale (1 = disagree strongly; 4 = agree strongly). Reliability of the three-item measure was not reported. Instead, Krause (2007b) tested a structural equation measurement model and reported that factor loadings of the three measurement items ranged from .90 to .70. This suggests that Krause's (2007b) three-item adaption of the GQ-6 can be used as a key indicator of the gratitude construct. Krause (2007b) also acknowledged that the three-item measure of gratitude maintained a significant, negative association with depressive symptoms ($r = -.135$). Thus, Krause (2006) was able to provide supportive evidence that items of GQ-6 maintain a negative association with negative affect or emotionality.

A priority for future well-being research involving old-old adults should be the implementation of the GQ-6 or the version reflective of Krause's (2007b) three-item adaptation. It is virtually unknown whether feeling appreciation or gratitude makes old-old adults feel happier or more satisfied in life. The GQ-6 offers a brief protocol that gerontological investigators can easily implement with old-old adults residing in various contexts (e.g., community dwelling, assisted living, long-term care). Further testing and cross-comparison of the GQ-6 with classical and contemporary life satisfaction and happiness measures in aging research is warranted.

Valuation of Life Scale

The Valuation of Life Scale (VOLS; Lawton et al., 2001) was derived to assess global constructs reflecting the cognitive-affective embrace of life. The VOLS consists of 19 items designed to capture sense of purpose in life (e.g., espousal of meaning and goals in life), persistence (e.g., personal conviction toward worthwhile efforts to solve problems), futurity (e.g., optimistic outlook toward life), self-efficacy (e.g., judgment of future competence), and hope (e.g., positive expectation of current and future occurrences). Respondents are asked to rate their level of agreement on a five-point scale (1 = disagree very strongly; 5 = agree very strongly). Lawton et al. (2001) psychometrically tested the scale using old and very old adults and reported evidence of a two-factor structure. The first factor consisted of 13 items and reflected positive

valuation of life (e.g., "Life has meaning for me"). The second factor included the remaining six items and reflected negative valuation of life (e.g., "I'm just putting in time for the rest of my life"). Internal consistency of positive VOL was reported at .94, whereas a Cronbach's alpha of .83 for negative VOL was acknowledged (Lawton et al., 2001). Interitem correlations for positive VOL were also reported to range from .37 to .73, whereas interitem correlations reflecting negative VOL ranged from .38 to .55.

With the exception of Ryff's Autonomy Scale, Lawton et al. (2001) reported that the VOLS displayed significant concurrent validity with remaining subscales of Ryff's Psychological Well-Being Scale ($r = .44$ to $r = .62$), measures of hardiness ($r = .23$ to $r = .40$), and assessments of individual mastery ($r = .35$ to $r = .52$). In addition, Lawton et al. (2001) acknowledged significant but weak correlations between the VOLS and measures of health (e.g., health conditions, activities of daily living), whereas correlations to measures of depression were moderate. Lawton et al. (2001) concluded that the VOLS may lack full independence from indicators of health and depressive symptomatology and therefore demonstrate marginal discriminant validity. Yet the VOLS has been reported to independently explain desired years of life above and beyond indices of health or depression (Lawton et al., 2001).

Evidence has suggested that negative dimension items of the VOLS are not well understood among old-old persons with lower levels of education (Lawton et al., 2001). Therefore, recent use of the VOLS with old-old samples has primarily been concentrated on implementation of the 13-item subscale of positive VOL (Jopp, Rott, & Oswald, 2008; Rott, Jopp, d'Heureuse, & Becker, 2006). This subscale has demonstrated satisfactory psychometric properties relative to investigations on old-old adults. For example, Lawton et al. (2001) reported that the positive VOLS subscale demonstrated high internal consistency ($\alpha = .83$) in a diverse community-dwelling sample of White and African American older adults over the age of 70. Similarly, Jopp et al. (2008) reported a Cronbach's alpha of .90 among old-old adults age 85 and older. Jopp et al. (2008) also indicated that demographic indicators including age ($\beta = -.22$) and marriage ($\beta = -.51$) were strongly predictive of the VOLS in the oldest old. However, health indicators (e.g., vision, Instrumental Activities of Daily Living) tended to explain a greater proportion of the variance in VOLS subscale for young-old adults than for old-old individuals (33% vs. 39%, respectively).

Investigators should continue to incorporate the 13-item positive VOLS subscale in research with old-old populations. The fact that this scale provides a brief assessment indicative of how very old persons positively

embrace the meaning of life is advantageous toward advancing theoretical understanding of spirituality in very old age. Yet convergent and discriminant validity of VOLS relative to established religious and spiritual measures used with old-old adults remains unclear. Further psychometric evaluation is warranted.

FUTURE DIRECTIONS

The future of subjective well-being measurement applied to oldest-old populations may emphasize three important areas of study: (a) multiple group comparisons, (b) cross-cultural validation, and (c) cross-fertilization of existing measures. Sophisticated statistical software packages including but not limited to LISREL, Mplus, and AMOS have made it more convenient to critique the factorial integrity, reliability, and validity of quantitative instrumentation across age groups, cultural contexts, and other measurements. Many first-generation measures of subjective well-being tended to be derived using older adult samples who exclusively resided in the United States, whereas many second-generation and domain-specific measures of well-being were originally developed using young-adult and middle-aged samples but have been successfully tested in various cultural settings. In particular, second-generation and domain-specific measures, such as the Satisfaction with Life Scale (Diener, Emmons, et al., 1985), the Positive-Negative Affect Schedule (Watson et al., 1988), and the Retirement Satisfaction Index (Floyd et al., 1992) appear to work well in diverse cultural settings.

Nonetheless, there has been limited consideration of whether past measures of well-being are age or culturally invariant relative to contemporary scales. As Fry and Ikels alluded in Chapter 15, there needs to be greater appreciation and awareness of the cultural forces in the science of subjective well-being research. Investigators should be aware that some classical measures may have factorial structures that may be developmentally appropriate for use with exceptionally old populations and culturally sensitive for application across older diverse or special populations. Furthermore, classical measurement tools that appear outdated may actually withstand the test of time and remain effective evaluations of happiness or life satisfaction across a wide array of old-old populations.

In addition, the Satisfaction with Life Scale (Diener, Emmons, et al., 1985) appears to capture culturally relevant components of life satisfaction across diverse global context (Diener, Suh, Lucas, & Smith, 1999; Eid & Larsen, 2008). However, it remains unclear whether classical instrumentation, second-generation measures, or domain-specific measurement

tools capture theoretically derived subjective well-being constructs (e.g., cognitive-affective) across multiple groups of old-old adults representing more than one cultural context. We believe that there is a need for greater testing, comparison, and cross-cultural validation of established instrumentation across multiple old-old groups (e.g., U.S. vs. international, community-dwelling vs. care facility, religious nonsecular vs. nonreligious secular). Multiple-group comparisons will help advance conceptual and theoretical modeling of subjective well-being in extreme old age.

There is a vast array of well-being measures from which investigators can select. Past and present investigators have acknowledged a need to cross-fertilize existing subjective well-being measures to derive more sophisticated theoretical conceptualizations of life satisfaction and happiness in old and very old age (Krause, 2003, 2004; Liang, 1984, 1985). Cross-fertilization involves the integration or blending of similar factors (e.g., cognitive-affective, happiness) across different multidimensional measures of subjective well-being. This was best demonstrated by Liang (1984), who used the LSI-A (Neugarten et al., 1961) and Bradburn Affect Scale (Bradburn, 1969) and established a new factorial structure of subjective well-being in old age. In particular, results from Liang's (1984, 1985) work conceptually redefined how to measure life satisfaction among older populations. As the field of gerontology continues to advance theories of aging and well-being, there will be an increasing need to restructure and adapt measurement instruments for the development and application of interdisciplinary and cross-cultural research (Krause, 2009). We believe that the cross-fertilization of measurement will help prevent the reinvention of previously established instrumentation and contribute to the identification of unique and common facets or subjective well-being indicators that universally represent the phenomenon in very late life.

This chapter aimed to inform investigators of several key classical, second-generation, and domain-specific measures of subjective well-being in late and very late life. Many of the presented measures have had limited use in domestic or cross-cultural research studies on the oldest old. Furthermore, there has been limited cross-cultural comparison involving subjective well-being measurement of old-old adults. One promising area for improvement would be the combination of quantitative assessments with ethnographic approaches (see the discussion of Cantril's self-anchoring ladder in Chapter 15) or clinical treatment therapies (see discussion of treatment review and Hyer and Sohnle model in Chapter 8). After all, not all psychometric instruments were originally devised as universal measures suitable for use among people representing divergent orientations, contexts,

and cultures. Religious and spiritual measurements discussed earlier in this chapter are a clear example of this reality.

Cross-disciplinary integration of quantitative and ethnographic methods of assessment or clinical interventions could have two profound outcomes. First, it would improve clarity of understanding relative to how complex and dynamic biopsychosocial processes and systems contribute to the ebb and flow of happiness and life satisfaction in old-old age (see the discussion regarding baseline theory in Chapter 4). Second, it would foster greater interdisciplinary and transdisciplinary efforts to develop more sophisticated and practical measurement instruments or techniques applicable to a broader sector of old-old adults. We believe that greater integrative methods of measurement, assessment, and application will further necessitate a demand for innovative modes of psychometric inquiry. Such advances will serve to better inform scientific understanding of the richness and diversity of happiness and satisfaction in exceptional old age. Consequently, we hope that this chapter will encourage gerontologists worldwide to consider adopting psychometric measures into a repertoire of examination. We believe this will foster cutting-edge research and quantitative analyses of subjective well-being in exceptional old age.

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